IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
APPEAL FROM THE EXAMINER TO THE BOARD
OF PATENT APPEALS AND INTERFERENCES

Appl. No:	09/922,412
Confirmation No.	7272
Applicant:	Cantwell, Robert W.
Filed:	August 3, 2001
Title:	System and Method for Multiplexing Data from Multiple Ports
Docket:	131105-1006
Customer No.:	32914

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF

Dear Sir:

This reply is in response to the Notice of Non-Compliant Appeal Brief mailed December 18, 2007.

Submitted herewith is a substituted Section (v), "Summary of Claimed Subject Matter."

Also submitted herewith is a substitute Appendix A, listing the currently pending claims. The Claim Listing in the Appeal Brief inadvertently omitted amendments made on November 30, 2006. Note that there are 5 independent claims: 1, 6, 9, 12 and 17.

Applicant hereby authorizes the Commissioner to charge any fees due or overpayments made to Deposit Account No. 070153. The Examiner is respectfully requested to call Applicant's Attorney for any reasons that would advance the current application to issue. Please reference Attorney Docket No. 131105-1006.

Respectfully submitted,
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(v) SUMMARY OF CLAIMED SUBJECT MATTER

In telecommunications systems, it is sometimes necessary or desirable to aggregate asynchronous framed data from multiple ports and time-division multiplexed (TDM) traffic onto a synchronous link for transport across a network. For example, Ethernet traffic from a local area network is aggregated with DS3 (or STS-1) TDM data onto a single optical uplink, which is inherently time-division multiplexed and synchronous. (p. 2, lines 1-8).

One prior art approach, which is described in the application, is to map framed data from each port (*e.g.* an Ethernet port) to a separate synchronous payload envelope (SPE). (See p. 2, lines 9-17.) Doing so preserves information that uniquely identifies the port on which Ethernet data was received, for the reason that each SPE corresponds to a different port.

The claimed invention takes a contrary approach. It maps framed data from more than one port into serial data stream, which allows the same SPE to carry the data from different Ethernet ports. Although the prior art method teaches that this would result in a loss of information about the source port, the claimed invention avoids this loss by inserting a unique identifier in each frame of framed data. Thus the claimed invention has at least the advantage of greater bandwidth efficiency as compared to this prior art approach, without loss of information on the source port.

Independent claim 1 is directed to telecommunication equipment comprising a switch (element 12 of figure 2) and a multiplexer (30 of figure 2) coupled to the switch for multiplexing data frames from a plurality of ports (element 26 of figure 2) into a single serial data stream (element 16 of figure 2). The switch inserts into a predetermined header field (*e.g.* VLAN field 46 of Ethernet header of figure 3) of each data frame an identifier that uniquely identifies the

port from which the frame originated. (*e.g.* vp. 5, lines 10-14). The multiplexer inserts the serial data stream into a single synchronous payload envelope (SPE) (p. 5, lines 5-8). Multiple SPEs could be used to carry the data stream, but one SPE is carrying data frames from multiple ports.

Independent claim 6 is directed to telecommunication equipment comprising a switch (element 12 of figure 2) and a multiplexer (30 of figure 2) coupled to the switch for multiplexing data frames from a plurality of ports (element 26 of figure 2) into a single serial data stream (element 16 of figure 2). The switch inserts into a predetermined header field (*e.g.* VLAN field 46 of Ethernet header of figure 3) of each data frame an identifier that uniquely identifies the port from which the frame originated. (*e.g.* vp. 5, lines 10-14). The multiplexer inserts the serial data stream into a single synchronous payload envelope (SPE) (p. 5, lines 5-8). Multiple SPEs could be used to carry the data stream, but one SPE is carrying data frames from multiple ports.

Independent claim 9 is directed to a method for multiplexing framed data from a plurality of ports that are comprised of adding a unique port identifier (p. 5, lines 1-14) to each frame for uniquely identifying the port from which the data came prior to multiplexing the data into a single data stream for transmission by a synchronous transmission medium. (p. 5, lines 14-19).

Independent claim 12 is directed to a method for multiplexing framed data from a plurality of ports that are comprised of adding a unique port identifier (p. 5, lines 1-14) to each frame for uniquely identifying the port from which the data came prior to multiplexing the data into a single data stream for transmission by a synchronous transmission medium. (p. 5, lines 14-19). Claim 12 further requires inserting the data stream into an SPE and a unique port identifier be inserted into a VLAN ID field (element 46 of figure 3) of a MAC frame 41.

Independent claim 17 is directed to a method for multiplexing framed data from a plurality of ports that are comprised of adding a unique port identifier (p. 5, lines 1-14) to each

frame for uniquely identifying the port from which the data came prior to multiplexing the data into a single data stream for transmission by a synchronous transmission medium. (p. 5, lines 14-19). Claim 17 further requires inserting the data stream into an SPE.

(viii) APPENDIX A – CLAIMS

1. Telecommunication equipment, comprising:

a switch having a plurality of ports for receiving framed data from a plurality of ports and switching the data to a plurality of ports, each frame of data including a header information, the switch operable to insert without removing any existing header information a unique port identifier into a predefined header field of frames of the data from each port to identify the port from which the data is received; and

a multiplexer coupled to the switch and operable to multiplex the data frames from the plurality of ports into a single serial data stream, the multiplexer being operable to multiplex the data from the plurality of ports into a single synchronous payload envelope.

5. The telecommunication equipment, as set forth in claim 1, further comprising a subscriber access multiplexer operable to receive the single serial data stream from the multiplexer, demultiplex the serial data stream into data from each port, and route the data based on the unique port identifier.

6. Telecommunication equipment, comprising:

a switch having a plurality of ports for receiving framed data from a plurality of ports and switching the data to a plurality of ports, each frame of data including a header information, the switch operable to insert a unique port identifier into a predefined header field of frames of data from each port to identify the port from which the data is received; and

a multiplexer coupled to the switch and operable to multiplex the data frames from the plurality of ports into a single serial data stream, the multiplexer being operable to multiplex the data from the plurality of ports into a single synchronous payload envelope;

wherein the data includes data in Ethernet data frames and the predefined header field includes a virtual LAN field.

7. The telecommunication equipment, as set forth in claim 1, further comprising:

a subscriber access multiplexer operable to receive data from a plurality of sender nodes in a network and operable to insert the unique port identifier based on an IP address of the sender node of the data, and multiplex the data into a single serial data stream;

the multiplexer being operable to receive the single serial data stream from the subscriber access multiplexer and demultiplex the data; and

the switch being operable to switch the demultiplexed data based on the unique port identifier to the plurality of ports.

8. The telecommunication equipment, as set forth in claim 1, further comprising a subscriber access multiplexer operable to receive the single serial data stream from the multiplexer and route the data to a destination network node based on the unique port identifier, a MAC address and IP address in the data.

9. A method comprising:

receiving framed data from a plurality of ports, each frame of data including header information;

adding a unique port identifier to the header information in the frames of data from each port, without removing header information, in order to identify the port from which the data came;

multiplexing the data from the plurality of ports into a single data stream for transmission by synchronous transmission medium.

10. The method, as set forth in claim 9, wherein receiving data comprises receiving data from a plurality of Ethernet ports.

11. The method, as set forth in claim 9, wherein multiplexing the data comprises multiplexing the data into a single synchronous payload envelope.

12. A method comprising:

receiving framed data from a plurality of ports, each frame of data including header information;

adding a unique port identifier to the header information in the frames of data from each port to identify the port from which the data came;

multiplexing the data from the plurality of ports into a single data stream for transmission by synchronous transmission medium;

wherein adding the unique port identifier comprises inserting the unique port identifier into a VID field of a tagged MAC frame of the data.

13. The method, as set forth in claim 9, further comprising converting the single serial data stream into SONET optical signals for transmission.

14. The method, as set forth in claim 9, further comprising:

receiving the single serial data stream;

demultiplexing the single serial data stream into data from each port; and

routing the data from each port based on the unique port identifier.

15. The method, as set forth in claim 9, further comprising:

receiving data from a plurality of sender nodes in a network;

inserting a unique port identifier based on an IP address of the sender node of the data; and

multiplexing the data into a single serial data stream for transmission;

receiving the transmitted data and demultiplexing the data into data from each sender node; and

switching the demultiplexed data based on the unique port identifier to the plurality of ports.

16. The method, as set forth in claim 9, further comprising receiving the single serial data stream and routing the data to a destination network node based on the unique port identifier, a MAC address and IP address in the data.

17. A method of multiplexing data from a plurality of ports for transmission, comprising:

receiving framed data from the plurality of ports, each frame of data including header information containing at least destination addresses;

adding a unique port identifier to a predetermined header field of the framed data from each port, without removing any header information, to identify the port from which the data came;

multiplexing the data from the plurality of ports into a single synchronous payload envelope; and

converting the multiplexed data into a optical signal for transmission.

18. The method, as set forth in claim 17, wherein receiving data comprises receiving data from a plurality of Ethernet ports.

19. The method, as set forth in claim 17, wherein adding the unique port identifier comprises inserting the unique port identifier into a VID field of a tagged MAC frame of the data.

20. The method, as set forth in claim 17, further comprising:

receiving the optical signal and converting to a single data stream;

demultiplexing the data stream from each port; and

routing the data from each port based on the unique port identifier.

21. The method, as set forth in claim 17, further comprising:

receiving data from a plurality of sender nodes in a network;

inserting a unique port identifier based on an IP address of the sender node of the data;

multiplexing the data into a single serial data stream for transmission;

receiving the transmitted data and demultiplexing the data into data from each sender node; and

switching the demultiplexed data based on the unique port identifier to the plurality of ports.

22. The method, as set forth in claim 17, further comprising receiving the single serial data stream and routing the data to a destination network node based on the unique port identifier, a MAC address and IP address in the data.